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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,979	01/29/2004	Brian T. Denton	BUR920030198US1	1978

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EXAMINER	
FLEISCHER, MARK A	

ART UNIT	PAPER NUMBER
3624	

NOTIFICATION DATE	DELIVERY MODE
10/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)
	10/707,979	DENTON ET AL.
	Examiner	Art Unit
	MARK A. FLEISCHER	3624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 June 2010*.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1, 2, 4 - 11, 13 - 17, 19 - 24, 26 and 27* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1, 2, 4 – 11, 13 – 17, 19 – 24, 26 and 27* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *29 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☐ All b)☐ Some * c)☐ None of:
1.☐ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10 August 2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

1. This non-final Office action is in reply to the Request for Continued Examination and accompanying amendments filed on 23 June 2010.
2. Claim 1 has been amended.
3. Claims 3, 12, 18 and 25 have previously been cancelled.
4. Claims 1, 2, 4 – 11, 13 – 17, 19 – 24, 26 and 27 are currently pending and have been examined.

Continued Examination Under 37 CFR 1.114

5. A request for continued examination under 37 CFR §1.114, including the fee set forth in 37 CFR §1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR §1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR §1.114. Applicant's submission filed on 23 June 2010 has been entered.

Examiner's Note

6. Upon reviewing the case record, it is apparent that the status identifiers in the instant amendment are wholly incorrect and seem to be based on the after final amendments of 1 June 2010 which were not entered. It is incumbent upon the Applicant to ensure that proper status identifiers are used. To further prosecution, Examiner considers the instant amendments in light of the amendments submitted after final on 1 June 2010.

Response to Amendments

7. The objections to claims 1, 7, 8, 10, 15, 16, 21 and 23 are withdrawn in light of Applicant's amendments.
8. The rejection of claims 10, 16 and 23 under 35 U.S.C. §112, second paragraph are reasserted in

light of Applicant’s amendments. Note also the related objections below.

9. The rejections of claims 1, 5, 7, 8, 10, 15, 16, 21 and 23 under 35 U.S.C. §112, second paragraph are withdrawn in light of Applicant’s amendments.

Response to Arguments

10. Applicant's arguments received on 23 June 2010 have been fully considered but they are not persuasive. Referring to the previous Office action, Examiner has cited relevant portions of the references as a means to illustrate the systems as taught by the prior art. As a means of providing further clarification as to what is taught by the references used in the first Office action, Examiner has expanded the teachings for comprehensibility while maintaining the same grounds of rejection of the claims, except as noted above in the section labeled “Status of Claims.” This information is intended to assist in illuminating the teachings of the references while providing evidence that establishes further support for the rejections of the claims.

11. While Applicant has addressed some of the issues as noted in the prior Office action, many of the claims contain confusing language as noted in the rejections below. Applicant is encouraged to set up a phone interview so that the claims can be thoroughly discussed and issues clarified in the interests of advancing prosecution.

12. The cited prior art and art not relied upon is replete with the use of linear programming models, application of such models in a sequence of subproblems and in association with priority levels and groups which are associated with demand levels.

Information Disclosure Statement

13. The Information Disclosure Statements filed on 10 August 2010 has been considered. Initialed copies of the Form 1449 are enclosed herewith.

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hegde, et al. (US 7197469 B2) in view of Nagarur, et al. (*Production planning and scheduling for injection moulding of pipe fittings: A case study*).

Claim 1:

Hegde teaches the following limitations as shown.

- *receiving customer demands for resources from different customers* (Hegde [2,21] refers to "end customers demand" where in such demand, *ipso facto* are received.)*;*
- *rank ordering, by a computing device, said customer demands to create prioritized customer demands* (Hegde [7,10] states "ranked by demand class" which corresponds to a *prioritized customer*)*;*
- *aggregating, by said computing device, said prioritized customer demands into a plurality of priority groups based on said rank ordering of said customer demands* (see previous limitation)*;*
- *optimizing, by said computing device, a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups* (Hegde [4,23] states "Historically a broader group of methodologies, referred to as extended MRP or MRP II, have included steps in which capacity requirements are evaluated based on releases generated by MRP. Amethod called "Best Can Do" (BCD) (see, U.S. Pat. No. 5, 971,585), which uses <u>linear programming</u>, extends the capability of MRP II based systems from analysis to the actual development of a near optimal production schedule. This involves moving up from lower to higher

levels of the BOM (implosion) and allocating resources sequentially at each level based on a priority ranking of the MRP material releases (which are, in turn, determined by priority ranking of orders they support).” (emphasis added))*;*

- *assigning, by said computing device, a portion of said resources* (Hegde [abstract] teaches “allocating resources including component supply…”) *to said highest priority group of said plurality of priority groups* (Hegde [2,21] refers to customers demand as in a supply chain. Hegde [4,31] states “allocating resources sequentially at each level based on a priority ranking…” (emphasis added)) *based on said optimizing said first mathematical linear programming model* (Hegde [12,19] refers to iteration and Hegde [4,31] teaches using “linear programming” and Hegde [4,23] noted above also refers to a sequential solution method using linear programming.)*,*
- *determining, by said computing device, each iterative solution for remaining ones of said plurality of priority groups in order of said rank ordering of said customer demands using results from a previous mathematical linear programming model solution* (Hegde [abstract] teaches a system and method “for the optimal allocation of supply and capacity over time that satisfy two key requirements (a) being consistent with accepted operational objectives (e.g. low inventory, short lead times, prioritized allocation of supply and capacity) […]” (emphasis added) where the consistency is with the previous allocation hence consistent with the previous solution.)*;*
- *assigning, by said computing device, portions of remaining resources to a next highest priority group of said plurality of priority groups based on said determining each iterative solution* (Hegde [4,31] refers to such iterative solutions methods as noted above)*;*
- *outputting, by said computing device, said production plan based on said assigning resources* (Hegde [abstract] refers to a feasible production schedule, and in [11,13] refers to an output of the production scheduling system. Hegde in [4,8] refers to use of linear programming techniques which are used to compute the production plan)*,*
- *independently determining, by said computing device, backorder costs penalties for each of said plurality of priority groups using said computing device* (Hegde [5,5] refers to back ordering as a typical element of BCD (Best Can Do) which uses linear programming as described in Hegde

[4,26-7]. Note that in Hegde [5,7] states "material releases of equal priority have equal cost penalties ..." thus contemplates prioritization associated "with rationing resources", hence is associated with prioritized demands, but see below. See also Hegde [claim 2] which refers to smaller groups than the priority ranked release schedule which associates priority level with a group)*; and*

- *assigning, by said computing device, by each successive mathematical linear programming model, a range of said backorder costs within a priority group of said plurality of priority groups to which resources are currently being assigned* (Hegde [13,30] *inter alia* describes in Hegde claims 1 – 3 a grouping process based on priority. Hegde [5,2-7] states "As is known, LP used in BCD is formulated as a cost minimization problem where the objective function is comprised of costs for processing, shipping, <u>back ordering</u>, inventory holding, <u>and material substitution</u>, <u>as well as negative revenues</u>, all of which are linear in their respective decision variables." Note that Hedge does not teach that such groups are assigned backorder costs *per se*, but as shown above, Hedge [5,5] does describe costs for backordering and the need to match assets with demand –[2,17]–, and the rationing of resources among competing demands –[1,25]).

Hegde does not specifically teach use of *successive linear programming models, per se,* or that *each iterative solution uses results from a previous mathematical linear program solution,* but Nagarur, in an analogous art, does. Nagarur [abstract] refers to a sequence of sub-problems involving use of linear programming methods. Nagarur [p.162, col. 2] further states "Establish the equivalent linear programming model for this priority level k. <u>All the solutions obtained from previous steps are included as additional constraints</u>." (emphasis added) hence corresponds to the aforementioned limitation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional constraints indicating the allocation of supply for that stage and wherein such additional constraint by definition maintains feasibility with the previous stage. The technique of using a sequence of linear programming models wherein the solution to one stage provides constraints for successive stages would have been known to one of ordinary skill in the art and the benefits of the resulting

combination with the use of linear programming models to provide prioritization of demands would have been predictable.

Claim 2:

Hegde teaches the following limitations as shown.

- *said prioritized customer demands are hierarchical and comprises two or more levels of hierarchy* (Hegde [2,60] teaches a set of hierarchical tiers and based on priority allocations Hegde [2,21] further refers to "customers demand" upon which the hierarchies are based.).

Claim 5:

Hegde does not specifically teach the following limitation, but Nagarur, in an analogous art, does as shown.

- *adding constraints to said mathematical linear programming models at each iteration ensure a feasible starting solution* (Nagarur [abstract] refers to a sequence of subproblems involving use of linear programming methods. Nagarur [p.162, col. 2] further states "Establish the equivalent linear programming model for this priority level k. <u>All the solutions obtained from previous steps are included as additional constraints</u>." (emphasis added) hence corresponds to the aforementioned limitation and is common place in the mathematical sciences where mathematical programs, and in particular, dynamic programming problems are problems that are posed in a well-defined formulation wherein adding additional constraints in one stage maintains feasibility in the previous stage or within the problem definition without the additional constraint.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional constraints indicating the allocation of supply for that stage and wherein such additional constraint by definition maintains feasibility with the previous stage. The technique of using a sequence of linear programming models wherein the solution to one stage provides constraints for successive stages would have been known to one of ordinary skill in the art and the benefits of the resulting combination with the use of linear programming models to provide prioritization of demands would have been predictable.

Claim 6:

Hegde teaches the following limitations as shown.

- *said method uses a different mathematical linear program for each iteration* (Hegde [2,10] refers to multiple stages.)

Hedge does not specifically state that there is a new linear program for each iteration (stage), but Nagarur, in an analogous art, does. See the rejection of claims 1 and 5 above. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional constraints indicating the allocation of supply for that stage and wherein such additional constraint by definition maintains feasibility with the previous stage. The technique of using a sequence of linear programming models wherein the solution to one stage provides constraints for successive stages would have been known to one of ordinary skill in the art and the benefits of the resulting combination with the use of linear programming models to provide prioritization of demands would have been predictable.

16. Claims 8, 9, 15, 21 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hegde, et al. (US 7197469 B2) in view of Nagarur, et al. (*Production planning and scheduling for injection moulding of pipe fittings: A case study*) and further in view of Hung, et al. (*A Production Planning Methodology for Semiconductor Manufacturing Based on Iterative Simulation and Linear Programming Calculations*).

Claims 8, 15 and 21:

Although claims 8, 15 and 21 are worded and/or structured slightly differently, they have the same scope and so are addressed together. Hegde teaches the following limitations as shown.

- *receiving customer demands for resources from different customers* (see the rejection of claim 1)*;*
- *rank ordering, by a computing device, said customer demands to create prioritized customer demands* (see the rejection of claim 1)*;*
- *optimizing, by said computing device, a first mathematical linear programming model based on processing a highest priority group of said plurality of priority groups* (Hegde in at least [2,50], *inter alia* teaches a method for optimizing associated with "demand prioritization techniques".

Hegde [6,60] refers to a match between assets and demands based on "specified levels of the Bill of Materials..." which corresponds to the *plurality of priority groups*.. Hegde [abstract] teaches a system and method "for the optimal allocation of supply and capacity over time that satisfy two key requirements (a) being consistent with accepted operational objectives (e.g. low inventory, short lead times, prioritized allocation of supply and capacity) […]" (emphasis added) where the consistency is with the previous allocation hence consistent with the previous solution.)*;*

- *assigning, by a computing device, a portion of said resources* (Hegde [abstract] teaches "allocating resources including component supply…") *to a highest priority group of said plurality of priority groups based on said optimizing said first linear programming model* (Hegde [2,21] refers to customers demand as in a supply chain. Hegde [4,31] states "allocating resources sequentially at each level based on a priority ranking…" (emphasis added)) *by iteratively solving mathematical linear programs* (Hegde [12,19] refers to iteration and Hegde [4,31] teaches using "linear programming")*,*
- *assigning, by said computing device, portions of remaining resources to a next highest priority group of said plurality of priority groups using a second mathematical linear programming model, wherein said second mathematical linear programming model uses results from said first mathematical linear programming model;*
- *outputting, by said computing device, a production plan based said assigning resources, wherein during said assigning processes, each mathematical linear programming model assigns a range of backorder costs within the priority group of said plurality of priority groups to which the resources are currently being assigned* (Hegde [abstract] refers to a feasible production schedule, and in [11,13] refers to an output of the production scheduling system. Hegde in [4,8] refers to use of linear programming techniques which are used to compute the production plan).

Hegde does not specifically teach

- *repeating said process of assigning portions of remaining resources, by said computing device, to the remaining groups of said plurality of priority groups in order of priority, wherein each*

subsequent mathematical linear programming model uses results from a previous linear programming model;

but Nagarur, in an analogous art, does. Nagarur [abstract] refers to a sequence of subproblems involving use of linear programming methods. Nagarur [p.162, col. 2] further states “Establish the equivalent linear programming model for this priority level k. <u>All the solutions obtained from previous steps are included as additional constraints</u>.” (emphasis added) hence corresponds to the aforementioned limitation. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to add additional constraints indicating the allocation of supply for that stage and wherein such additional constraint by definition maintains feasibility with the previous stage. The technique of using a sequence of linear programming models wherein the solution to one stage provides constraints for successive stages would have been known to one of ordinary skill in the art and the benefits of the resulting combination with the use of linear programming models to provide prioritization of demands would have been predictable.

Neither Hegde nor Nagarur specifically teach the following limitations, but Hung, in an analogous art, does as shown.

- *aggregating, by said computing device, said prioritized customer demands into a plurality of priority groups based on said rank ordering of said customer demands* (Hung [259, col.1] states “These demands are divided into prioritized *classes* that are loaded onto front end facilities by incremental linear programming calculations.”)*;*

Hung provides teachings for production planning in a manufacturing setting using iterative linear programming calculations and therefore would have been known to one of ordinary skill in the art at the time of the instant invention. Combining the teachings of Hung with those of Hegde and Nagarur would provide a methodology very similar to those claimed and in light of these teachings, the instant invention would have been obvious. These teachings provide a sequential and optimal allocation of resources based on prioritized demands as taught in Hegde, Nagarur and Hung and their combination would therefore have been predictable.

Claims 9 and 22:

Hegde teaches the following limitations as shown.

- *when repeating said process of assigning remaining resources, said method uses a different linear programming model for each repetition of said process of assigning remaining resources* (see the rejection of claim 6).

Hedge does not specifically state that there is a new linear program for each iteration (stage), but Hung, in an analogous art does. Hung [abstract] describes and/or discloses using a reformulated LP model for a revised planning calculation. Such models are used in an iterative fashion. Moreover, Examiner takes **as admitted prior art** that it is old and well-known as well as common place in the dynamic programming sciences to use a new formulation of a linear program by adding constraints based on prior allocations and such new constraints, *ipso facto,* result in a different mathematical linear program. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hegde, and what is old and well-known in the art as the use of optimization techniques such as linear programming sequentially applied to prioritized groups in a hierarchy would promote optimal resource allocations to such higher priority groups and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

17. Claims 4, 7, 10, 11, 13, 14, 16, 17, 19, 20, 23, 24, 26 and 27 are rejected under 35 U.S.C. §103(a) as being unpatentable over Hegde, et al. (US 7197469 B2) in view of Nagarur, et al. (*Production planning and scheduling for injection moulding of pipe fittings: A case study*) and further in view of de Farias (*The Linear Programming Approach To Approximate Dynamic Programming: Theory And Application*) and further in view of Fakhouri, et al. (US 746147 B1) and further in view of Leachman, et al. (*IMPReSS: An Automated Production-Planning and Delivery-Quotation System at Harris Corporation-Semiconductor Sector*).

Claim 4:

Hegde does not specifically teach the following limitations as shown, but Fakhouri, in an analogous art, does.

- *said mathematical linear programs solved in each iteration use the solution to the previous mathematical linear program as a starting solution* (Fakhouri [36,18] states "A scheme for performing the allocation of various resources based on the values for the various resources in the integer solution solution [*sic*] obtained in the previous step." See also the rejection of claim 3 above.).

Examiner takes **admitted prior art** that it is old and well-known as well as common place in the management sciences that decision/allocation problems with multiple stages are often posed as dynamic programming problems wherein each stage provides the starting point or allocation for the next stage. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hegde, Nagaruru, deFarias, Fakhouri and Leachman and what is old and well-known in the art as the use of optimization techniques such as linear programming sequentially applied to prioritized groups in a hierarchy would promote optimal resource allocations to such higher priority groups and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

Claim 7:

Hegde [2,21] refers to customer demands, but does not specifically teach the following limitations as shown, but Fakhouri, in an analogous art, does.

- *said assigning process solves said mathematical linear programs for higher prioritized customer demands before solving said mathematical linear programs for lower priorities* (Fakhouri [5,14] states "For example, if two resources depend on a resource that can only support one of them, then one way to resolve the conflict is to allocate the scarce resource to the resource with higher priority.").

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hegde and Fakhouri and what is old and well-known in the art as the use of optimization techniques such as linear programming sequentially applied to prioritized groups in a hierarchy would promote optimal resource allocations to such higher priority groups before lower priority

groups and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

Series sequence

Claims 10, 16 and 23:

Hegde does not specifically teach the following limitations as shown, but Fakhouri, in an analogous art, does.

- *each different linear programming model uses as a starting point a program solution of the previous linear programming model* (see the rejection of claims 3 and 4 which cite Fakhouri regarding lower-level resource allocations.).

Examiner takes **as admitted prior art** that it is old and well-known as well as common place in the management sciences that decision/allocation problems with multiple stages are often posed as dynamic programming problems wherein each stage provides the starting point or allocation for the next stage. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hegde, Fakhouri and Leachman and what is old and well-known in the art as the use of optimization techniques such as linear programming sequentially applied to prioritized groups in a hierarchy would promote optimal resource allocations to such higher priority groups and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

Claims 11, 17 and 24:

Hegde does not specifically teach the following limitations as shown, but Fakhouri, in an analogous art, does.

- *during said allocating processes, each linear programming model fixes variables associated with priority groups that have a lower priority than the priority group to which the resources are currently being allocated* (Fakhouri [38,40-2] teaches fixing variables according to the solutions of previous stages.). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Hegde and Fakhouri because both refer to resource allocation decisions that are prioritized in a hierarchical fashion and wherein resource

allocation decisions associated with higher priority, hence established in earlier stages are fix thereby adding constraints so that subsequent formulations remain feasible for earlier ones and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

Claims 13, 19 and 26:

Hegde teaches the following limitation as shown.

- *dividing said priority groups into different sub-priority tiers* (Hegde [2,36] teaches a tiered planning system and where each tier comprises a range such as “3 months to 7 yr” (Hegde [2,42]) which constitute a set of sub-priority levels. See also Hegde [16,34-38] which teaches “additional level of priority”).

Claims 14, 20 and 27:

Hegde, does not specifically teach *said sub-priority tiers can be processed simultaneously,* but Fakhouri, in an analogous art, does. Fakhouri [4,55] teaches satisfying multiple constraints simultaneously, and in [26,15] states “Tasks are defined such that (a) each task is computationally significant as to the bookkeeping costs of managing parallelism” (emphasis added) where ‘parallelism’ indicates simultaneous processing. Furthermore, Examiner takes **as admitted prior art** that it is old and well-known as well as common place in the data processing arts to enable processes to be performed either separately or in parallel, *i.e.,* simultaneously. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to enable separate or simultaneous processing of resource allocation decisions depending on what is necessary and convenient and one of ordinary skill in the art would have had the technical capability to combine these teachings which would have had predictable outcomes.

Conclusion

Any inquiry of a general nature or relating to the status of this application or concerning this communication or earlier communications from the Examiner should be directed to **Mark A. Fleischer** whose telephone number is **571.270.3925.** The Examiner can normally be reached on Monday-Friday, 9:30am-5:00pm. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's acting supervisor, **Lynda Jasmin** whose telephone number is **571.272.6782** may be contacted.

The prior art made of record and not relied upon that is considered pertinent to applicant's disclosure are:

- Hegde, et al. (US 6701201 B2)
- Huang, et al. (US 6151582 A)
- Howie, et al. (US 5093794 A)
- Kirby, et al. (US 6498786 B1)
- Shekar, et al. (US PgPub 20030208392 A1
- Lyon, et al. (*Matching Assets with Demand in Supply-Chain Management at IBM Microelectronics*)

and teach various forms of resource allocation and/or optimization using multi-stage linear programming techniques deemed relevant by the Examiner.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://portal.uspto.gov/external/portal/pair <http://pair-direct.uspto.gov >. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at **866.217.9197** (toll-free).

Any response to this action should be mailed to:

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or faxed to **571-273-8300**.

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Mark A. Fleischer
/Mark A Fleischer/
Examiner, Art Unit 3624 30 September 2010

/LYNDA C JASMIN/
Supervisory Patent Examiner, Art Unit 3624